

Q

To: AE/Chief Engineer
AI/Dr. Mulville

From: Q/Associate Administrator for Safety and Mission Assurance

Subject: Safety and Mission Success Expectations for Program Management
Council Reviews (PMCs)

As a part of the Administrator's February 28 task, we strongly recommend you consider the following suggestions to re-engineer the PMC process in order to better support safety and mission success:

1. **Change the order of the presentations at PMC reviews.** Begin each PMC review with the Program/Project Manager's report on mission success (see 2., below). Follow that with the results of the Independent Annual Review (IAR), which should be structured to verify or refute the PM's report.
2. **Require PMs to report on mission success/risk management.** At PMC reviews, PMs should be required to address the following:
 - Minimum mission success criteria keyed to potential mission failure events;
 - Identification of credible causes of mission failure (requires knowledge of the probability and consequences of potential failure events);
 - Identification of critical hardware and software items, the failure of which could lead to mission failure (including death or serious injury), based on analysis of the likelihood and higher-level system effects of their failure;
 - A cross-check of the top-down analysis of mission failure causes against the bottom-up analysis of critical items to assure that all critical failure modes have been identified;
 - As applicable, estimates of the probability of:
 1. Death or serious injury to members of the public (goal: less than 1 chance in 1,000,000 per mission);
 2. Loss of astronaut or test pilot crew (goal: less than 1 chance in 1,000 per mission);
 3. Lost-time injury to a member of the NASA workforce (goal: less than 1 chance in 500 per year—corresponds to NASA's FY00 lost-time case rate goal of 0.20);
 4. Loss of high-value equipment or property (goal: less than 1 chance in 100 per mission);
 5. Mission success.
 - A listing of primary risks;

- Risk mitigation plans that are responsive to the information above, together with cost and schedule implications.

3. **Factor risk management into the IAR's assessment of program risk.** If a program/project is not managing risk in accordance with agency requirements (NPG 7120.5A), how can the IAR's assessment of program risk be rated "green"? While this does not seem logical, this situation is frequently seen in the IAR presentations at PMC reviews. In addition to an assessment of program risk, the IAR must assess the PM's management of risk. We will support this by ensuring that a qualified NASA risk assessor is available to serve on all applicable IARs.

My staff and I will be happy to work with you on improving the PMC process. Please contact Dr. Pete Rutledge, 358-0579; Mr. Phil Napala, 0564; or me.

Frederick D. Gregory